

ABSTRACT OF THE PRESENT INVENTION:

An electrolyte membrane having a porous base material having pores filled with a first polymer capable of conducting a proton, wherein the porous base material comprises i) at least one second polymer selected from the group consisting of polyolefins and ii) a third polymer having double bond in the polymer, and contains a crosslinked second polymer wherein molecules of the second polymer are crosslinked with one another; and a fuel cell, particularly a solid polymer fuel cell, more specifically a direct methanol polymer fuel cell, using the electrolyte membrane. The electrolyte membrane is excellent in the inhibition of permeation of methanol, exhibits no or reduced change in its area, and is excellent in proton conductivity.